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AMMUNITION BULLETIN N°20

FOR INSPECTING ORDNANCE OFFICERS

AND

DIVISIONAL AMMUNITION OFFICERS.

(JUNE 1941.)

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CHIEF INSPECTOR OF ARMAMENTS,
WOOLWICH, S.E.18.



SECURITY.

AMMUNITION BULLETIN NO.20.

for

INSPECTING ORDNANCE OFFICERS

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DIVISIONAL AMMUNITION OFFICERS

June, 1941.

Issued by :-

CHIEF INSPECTOR OF ARMAMENTS,

WOOLWICH.

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The following table gives general details of ammunition which may be met with in the equipment of Naval Guns in the Land Service for Coast Defence.

Gun	Cartridge.	Shell and filling.	Fuze	Fuze Loose or in Shell	Tube	Primer	Remarks
B.L. 6" Mark VII	23-lbs. 2-ozs. Cordite } S.C.103 Mark I Foil. }	C.P.C. Mark VII A filled powder. H.E. Mark XIV A.Q. or Mark XVII A.Q. filled lyddite or T.N.T. Shrapnel Mk.XIV A.Q. Shot Practice Mark IV A.Q.	No.15 or 15C No.44 XI ² or 45P Mark X ² No.93.	In Shell } Loose }	.4" Percus- sion Mk VII or Mk.IX.	NIL	{ As far as can be traced all "H.E. shell issued have been A.Q. not A shell. Some 6" VII gun and XI gun batteries have been issued with 6" C.P.C.
B.L. 6" Mark XI	33-lbs. 12 drams S.C.150. Mk.I or II Foil.	-"	-"	-"	-"	-"	{ Mark VIII A.Q. shell.
B.L. 6" Mark XII	27-lbs. 13-ozs. S.C.122 Mk.I or II Foil.	Shrapnel Mk.XIV A.Q. C.P.C. Mark VIII A.Q. filled powder. H.E. Mark XIV A.Q. XVII A.Q. Shot Practice Mark IV A.Q.	No.93 No.15 or 15C No.44 XI ² No.45P X ² }	Loose In Shell } Loose }	.5"Percus- sion Mk.VI	NIL	6" XII guns Must have A.Q. shell - Must not use A shell.
B.L. 5.5" Mk.I.	22-lbs. 8-ozs. 10 drams. S.C. Mk.I - IV Foil.	C.P.C. filled T.N.T. Mark V / 10 A. H.E. filled T.N.T. Mk.IA or IIA N.T. Shrapnel Mk.IA. Practice Projectiles 5.5" H.E. weighted H.E. substitute.	{ 479A or 480 45P or 44 93 }	In Shell Loose Loose	.5" Percus- sion. Mk.VI	NIL	
Q.F. 4.7 Mk.V.	8-lbs.10-ozs.7-drams Cordite S.C.103 Mark I Foil.	H.E. Mk.IA filled lyddite C.P.Mk.II ^A filled powder. Shot Practice Mark VIIIA.	No.45P VIII ^{xxx} No.12F.	In Shell " "	.4" Percus- sion Mk.VII or IX	NIL	Base of Q.F.case is fitted with an adapter screwed into a metal igniter containing gunpowder which rests inside the cordite charge.

Q.F. 4" IV.	5-lbs. 1-ozs. 2-drams Cordite S.C.103 Mk.II Foil.	S.A.P. Mk.I filled lyddite.	No.12 F. special.	In Shell	NIL	Percus- sion No.9 in cartri- dge case No. VI. NIL.
B.L. 4" IX.	7-lbs. 14-ozs. 10-drams. Cordite S.C.103 Foil.	H.E. VI or VIII.	No.45P ²	"	.5 Percus- sion Mk.VI.	"
B.L. 4" VII.	9-lbs. 10-ozs. S.C.103 Foil.	C.P. filled powder. Practice Projectiles C.P. weighted Powder substitute.	No.12 F.	"	"	NIL.

Q.F. 12 pdr. Mk.III ^A .	2-lbs. 1½-ozs. Cordite S.C.061 with tubo group.	S.A.P. Mks.I-II filled lyddite. H.E. Mk.IV filled lyddite. Shot Practice Mk.I.	No.12P Special.IX No.45P	In Shell In Shell	4" Percus- sion Mk.IX NIL	Cartridge case has screwed adapter & metal igniter in charge.
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FIXED AMMUNITION.

Q.F. 3 pdr. Hotchkiss.	6-ozs. 14-drams H.S.C.T. Cordite 124/058 or 7-ozs. 7-drams. H.S.C.T. Cordite 134/055.	Steel shell filled gunpowder. H.E. shell filled lyddite. Practice and sub calibre.	(Percussion Base Hotchkiss. No.19a or No.44 No fuze.	In Shell " " "	Percus- sion No.2 or No.15.	Practice shot are all suitable for firing in sub calibre guns, i.e. annealed to prevent break up in parent gun.
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EQUIPMENTS.

OF B.L. AMMUNITION.

PROPELLANTS.									
Weight of Projectile.		Nature and Estimated Weight of Bursting Charge.			Approx. Len. of Projectile Inches.		Dia. of Proj.	Fuze	Expl. Quantity (Shell).
Lb.	ozs.	Nature	Lb.	Ozs.	Plugged	Fuzed	Grummet		lbs
1938	-	Shellite $\frac{70}{30}$	48	7	67	67	17"	159	48.4
1938	-	-	-	-	60	-			
380	-	Lyddite or T.N.T.	32	8	33.8	34.8	10.8"	13,45 or 45P	32.5
380	-	Do.	32	8	33.8	34.8		117 or 119	32.5
380	-	Lyddite	12	-	34.7	34.7		16 or 346	12
380	-	T.N.T./B.W.X.	13	-	37.0	37.0		346	13
380	-	Powder	28	13	34.7	34.7		15	28.8
380	-	Do.	2	3	33.1	35		88	2.2
380	-	-	-	-	36	-		-	-
100	-	Lyddite or T.N.T.	13	2	21.6	22.6	7.5"	13,45 or 45P.	13.1
100	-	do.	7	14	18.8	19.8			7.9
99	4	do.	8	7	21.2	22.2			8.4
102	4	do.	8	7	21.2	24.7		45P in Adapter	8.4
100	-	Powder	5	8	20.5	20.5		23 or 230	5.5
100	-	Lyddite or Shellite.	3	5	17.3	17.3		11 or 15	3.3
100	-	do.	3	5	23	23		16 or 480	3.3
100	-	do.	3	5	23	23		do.	3.3
100	-	T.N.T./B.W.X.	3	8	24	24		480	3.5
100	-	Powder.	-	10	18.9	20.5		88	0.7
100	-	-	-	-	Not Specified.			-	-
100	-	-	-	-	do.			-	-
-	-	-	-	-	14.5	-		-	-

EXIV.

5-in.
5-in.

* Calculated in accordance with para.23. Magazine Regulations Part I, 1934.

WEIGHTS AND DIMENSIONS OF

CARTRIDGES.								
	Approx. Length **	Propellant.					Means of Ignition	Approx. of Pro-
		Charge	Nature	Nominal Weight				
	Inches			lbs.	oz.	drs.		Nature
6-inch Mk.II.	16.7	Full	Cordite 30 M.D.26 W.173	13 15 15	4 15 15	- - -	Percussion .4-inch cylinder and bag	H.E.:-- Mk.XI " XV " XXB C.P. A.P. Shr pnel Shot Frac.
4.7-inch Mks.III to IV*	16.6	Full	Cordite 20 RDB,MD. M.C.16 RDB.16 NCT.22 W 112	5 6 6 6 6	7 - - 9 15 4	- - - 12 8 -	Electric, .4-inch or Tube, Vent, igniter or with cordite	H.E.:-- Mk.V & VII " VIII & XI " X & XII " VI NT. " XIII NT. S.A.P.:-- Mk.I II " III Shrapnel Shot Prac.
		Reduced	Cordite 7½	2	5	2		
12-pr., 12-cwt. Mks.I to II**	15.5	Full "	Cordite 15 MD,RDB.11 N.052.	1 2 2	15 - 8	- - 3	Tube, Vent, Electric, in adapter with metal filled R.F.G.2.	H.E.:-- Mk.III " IV NT " V " VIII C.P. Shot Prac.

* In accordance with Para.23 Magazine Regulations, Part I, 1934.

** Including Adapter.

EQUIPMENTS.

Q. T. SEPARATE AMMUNITION.

PROJECTILES.										
Weight of Projectile		Nature and Estimated weight of Bursting Charge.				Approx. Length of Projectile Inches.		Approx. Dia. of Projectile Over	Fuze	Expl. Qty.* (Shell)
lb	oz	Nature	lb.	oz.	drs.	Plugged	Fuzed	Grummet		lbs.
100	-	See details given in 6-inch B.L. Table.								
		Powder	8	14	-	23	23	7.5"	11,15	8.9
		See details given in 6-inch B.L. Table								
5	12.5	Lyddite or T.N.T.	6	15	8	16.5	17.5	6"	13,18 45 or 45P	7
			3	15	-					3.9
			4	1	4					4
			6	4	2.5					6 3
		Lyddite Lyddite T.N.T.	3	15	6	13.7	13.7		12F Spl. 500 5 88 -	4
			1	12	10					1.8
			1	12	10					1.8
			1	11	6					7
		Powder	-	4	-	13	15			0 3
		-	-	-	-	13	-		-	
12	8	Lyddite or T.N.T.	1	3	6	9.8	10.8	18, 45 or 45P 12 -	1.2	
			-	12	-	6	9.6		.8	
			1	3	6	9 4	10.4		1.2	
			-	11	5	8	9		0.7	
		Powder	1	3	8	12.2	12.2		1.2	
		-	-	-	-	8	-		-	

WEIGHTS AND DIMENSIONS

Gun	Weight of.			Approx. Length in inches.	Weight Burs ing Nature		
	lb.	oz.	dr.				
4.5-inch.	Ctge. H.E. Shell.	86	8	-	48.5	T.N.T.	
		55	-	-			
	Ctge. S.A.P. Shell.	86	8	-	48.5	T.N.T.	
		55	-	-			
6-pr. 10-cwt.	Ctge. H.E. Shell.	11	10	-	25.5	Lyddite T.N.T. T.N.T. T.N.T. T.N.T. -	
		6	4	8			
		6	4	8			
		6	2	-			
		6	1	4			
		6	4	0			
	Ctge. Prac. R d. Proj. Proj. (Break up) Shot	6	4	8	15		
		6	4	8			
		6	4	8			
		6	4	8			
6-pr. 6-cwt.	Ctge. Steel Steel Shell.	10	4	-	19.2	Powder	
		6	-	-			
6-pr. sub- calibre.	Ctge. Prac. Shot.	6	4	-	19.2	Powder Powder	
		6	-	-			
	Proj. Mk. I. Proj. Mk. II.	6	-	-			
		6	-	-			
3-pr. sub- calibre.	Ctge. Prac. Shot. Proj.	6	4	-	20.4	Weighted	
		3	4	15½			
		3	4	15½			
2-pr sub- calibre.	Ctge. Prac. Proj. Tracer Shot.	3	4	-	11.3	Weighted	
		2	2	6			
		2	2	6			
1-inch Sniping Rifle.	Ctge Bullet.	13	5	-	5.2		
		-	10	-			

EQUIPMENTS.

OF O. F. FIXED AMMUNITION.

of Charge.			Propellant Nature and Weight			Fuze	Primer	Remarks	
lb.	o.	dr.	Nature	lb.	oz.	dr.			
4	-	8	} W.145	11	4	4	230P & Gaine No.11	9	
2	3	4					501	9	
-	7	12	N.042	1	6	3	44	15	No.1 tracer for early marks.
-	8	-	do.	1	6	3	242	15	
-	7	7	do.	1	7	2	242	15	
-	8	-	N.045	1	4	4	242	15	
-	8	-	do.	1	4	6	244	15	
-	-	-	N.034	-	13	4	-	2	do.
-	-	-	do.	-	13	4	-	15	
-	3	11	M D.,RDB.4 1/4	-	8	4	Hotchkiss	Cap	
			do. 4 1/4	-	7	8	"	or	
			W.040.	-	7	10	"	2.	
-	-	-	M.D.,R.D.B.,	-	8	11.5	-	2	
			M C 4 1/4 or						
			W.040.						
-	6	1	do.	-	8	11.5	44P	2	
-	6	3	do.	-	8	11.5	242	2	
-	-	-	M.D.,R.D.B.	-				2	
			or M.C.4 1/4 or	-	7	4			
			W.040.	-	7	6			
-	-	-) W.T.112-056	-	3	.8		5	Tracer cavit empty in later marks
-	-	-) HSCT.124-058	-	3	.4		
			Cordite 3	-	-	6		Elec. or Perc.	

COAST ARTILLERY EQUIPMENTS.

Weight and Dimensions of Packages for B.L. Ammunition.

Gun	Cylinders Cartridge (Case Powder Cylindrical for 15-inch)	Storage Dimensions Including Crato (Except 15-in.)	Contents	Estimated Weight Inc- luding Crato. lbs.	"Explosive" Quantity" lbs.	Remarks						
	No	Material	Ign	Dia	Ign.	Width	Depth	Fracton Charge s	Empty	Filled		
15"	M	Press	54.7	14.	54.7	14.2	14.2	2 Quarter Charges.	198	381.5	216	1 Charge with Igniter.
9.2"	35 50	Zinc Tinned- Steel.	32.8 32.5	10.2 9.2	38 35.9	11.9 11.4	11.9 11.4	1 Half Super Charge 1 1/2 or 2 - 1/4 Chges. MD 37. 1 1/2 or 2 - 1/4 " " MD 26. 1 1/2 or 2 - 1/4 " " S.C. - 2 Increment Charges. W. or W.M.	42 33	102 100 94 95 94	61.9 60 53.5 54.5 54.3	Crate Approx. 19 lbs. Deduct 9 lbs for Cylinder No. 50.
6"	34 44	Zinc or Brass. Tinned- Steel.	27.2 26.4	8.3 6.8	30.9 29.8	9.5 9.1	9.5 9.1	2 - 1/4 Chges. M.D., M.C. or RDB. 2 - 1/4 " " S.C. 2 - 1/4 " " W. or W.M. 1 and 1 - 2/3 Chge. S.C.	24.5 20	49 49 48 56	23 23.3 22.3 29.8	Crate Approx. 10-lbs. Deduct 5-lbs. for Cylinder No. 44.

* In accordance with Para. 23, Magazine Regulations, Part I, 1934.

279.

COAST ARTILLERY EQUIPMENTS.

Details of Packages for Q.F. Separate Ammunition.

Gun	Package		Approx. Dimensions Inches.			Estimated Weight.		Contents	Explo- sive # Quantity
						Filled	Empty		
	No.	Material	Len.	Width	Depth	lb.	lb.		lb.
6-inch Mk.II.	C.10	Wood, Zinc lined.	17	18.8	19.7	209	52	4 Ctges:- Cordite M.D. or W.	26.5 31.8
4.7-inch Mks.III to IV*	C.14	do.	19	14.3	19	164	54	6 Ctges:-	
	C.15	do.	19	14.5	19.5	164	54	Full Chge:- Cordite	16.3
								Other Natures	19.5
						139	54	Reduced Chge:- Cordite	7.2
12-pr. 12-cwt. Mks.I to II*	C.34	Wood, Zinc lined.	18.5	11	20.6	131.5	68	10 Ctges:- Cordite M.D.or R.D.B N	9.5 10 12.5
	P.19	Wood	16.3	10.3	14.4	95.5	2.5	6 Projs:- C.P. H.E.III & IV. H.E.IVNT & VIII.	7.2 7.2 4.5

* In accordance with para.23 Magazine Regulations Part I.

COAST ARTILLERY EQUIPMENTS.

Details of PACKAGES for Q.T. FIXED AMMUNITION.

Gun	Number of Packages	Material	Stowage Dimensions in Inches.			Estimated Weight - Lb		CONTENTS	
			Len.	Width	Depth	Empty	Filled	Rds.	Explosive Quantity
4.5-inch.	C.221	Steel (Cyl.)	50.8	7.2	7.2	28	115	1	9.7-lb.
6-pr. 10-cwt H E. Prac. Prac., Break-up. "	C.197	Steel	27.3	17.3	7.6	40	156	10	12 2
	C.197	Steel	27.3	17.3	7.6	40	146	10	4.1
	C.59Z	Wood	31.9	12.8	13	55	160	9	3.7
	C.258	Wood Z L	34.9	12	11.9	54	159	9	3.7
6-pr. 6-cwt.	C.89	Wood	23	14.4	11.5	21	130	12	5.9
6-pr. Sub-calibre.	C.89	Wood	23	14.4	11.5	21	135	12	3.3
3-pr. sub-calibre.	C.90	Wood Z.L	22.9	14.7	12.4	37	137	16	3.7
2-pr. sub-calibre.	C.102	Wood	22.2	15.5	14.2	24	186	50	4.8
	C.205	Wood	22.8	14.5	14.2	24	186	50	4.8
1-inch Aiming Rifle.	H.13.	Wood	17	8.5	10.9	13	108	114	1.3
	H.20.	Wood	17.3	10.4	9	13.5	103	108	1.3

In accordance with Para.23 Magazine Regulations, Part I 1934.

281. BOMBS, M.L., 3-INCH MORTAR - METHODS OF FILLING.

The following tables summarizes the main features of the existing method of filling designs :-

H.E. BOMBS.

Design No. M. of F.	Nature of filling.	Exploder Cavity.	Weight of C.E. Pellet Exploder.	Fuze D.A.No.	Remarks
5143	Amatol 80/20 with topping of T.N.T.	Paper tube encloses steel exploder container.	6 $\frac{1}{4}$ drams.	138	
7407	do.	do.	1 $\frac{1}{4}$ -oz.	150	
9638	do.	do.	12 drams	152 or 152A.	
11515	do.	Paper tube with waxed felt washers.	do.	do.	Bomb fitted with nose adapter.
11515A	Amatol 80/20 with topping of R.D.1021	Paper tube.	do.	do.	do.
11757	Amatol 80/20 with topping of T.N.T.	Paper tube with waxed felt washers.	1 $\frac{1}{4}$ -oz.	150	do.
11757A	Amatol 80/20 with topping of R.D.1021.	Paper tube	do.	do.	do.

BURSTING SMOKE BOMBS.

5144	Phosphorus	Steel Exploder Container.	1-oz 11-drs	139	Side charging hole.
7299	do.	do.	6 $\frac{1}{4}$ -drams.	138	do.
7413	do.	do.	1 $\frac{1}{4}$ -oz.	150	do.
9871	do.	do.	12-drams.	152 or 152A.	do.
10538	do.	do.	do.	do.	Base charging hole.
10548	do.	do.	1 $\frac{1}{4}$ -oz.	150	Base charging hole.

Notes.

R.D.1021 is a pitch-like, lead free composition consisting of bitumen, gum dammar, castor oil and kaolin.
Bombs not fitted with exploder containers have nose adapters to receive the fuze.

The exploder container of the Mark VI bursting smoke bomb is welded in position.

The exploder container of the Mark VII bursting smoke bomb is integral with the head of the bomb.

The "Plugs, fuze-hole, 1.375-inch" to be used in place of the fuzes are :-

- No.3 in place of fuze No.139 or 139P
- No.4 in place of fuze No.138
- No.5 in place of fuze No.150
- No.6 in place of fuze No.152 or 152A.

PRACTICE BOMBS.

Design No.	Nature of filling	Exploder System	Fuze D.A.No.	Remarks
5145	7-ozs Gunpowder G.12 in shalloon bag over inert material.	2-7 dram primers of gunpowder.	139P	Bomb fitted with nose adapter.
8194	4-ozs.4-drs. Gunpowder G.12 in shalloon bag over inert material.	2-7 dram primers of gunpowder.	138	do.
8171	7-ozs. Gunpowder G.12 in shalloon bag over inert material.	2-7 dram primers of gunpowder.	150 or 150P.	do.
9872	4-oz.4-drs. Gunpowder G.12 in shalloon bag over inert material.	2-7 dram. primers of gunpowder.	152 or 152A.	do.

STAR BOMB.

Details of method of filling design No.7687 are given in Item 202, Bulletin No.17.

SMOKE OBSERVING BOMB.

Details of method of filling design No.9757 are given in Item 201, Bulletin No.17.

282. ROCKET, "U", H.E. 3-INCH.

When inserting the adapter with gaine No.13 and fuze No.700 in the H.E. Bomb the paper collar surrounding the gaine should be left in position.

283. FUZE, PERCUSSION, D.A., NO.115E. - WEIGHT MARKING.

Reference ~~Items~~ 164 and 160, Bulletin No.15. The Range Table standard weight for fuze No.115E is being taken as 2-lbs. 12-ozs.; the weight groups for this fuze are, therefore :-

- L 2-lbs.6-ozs. to 2-lbs. 10-ozs.
- UL 2-lbs. 2-ozs. to 2-lbs. 6-ozs.

284. CARTRIDGE, M.L. 3-INCH MORTAR, AUGMENTING USE OF CORDITE W OR W.M.

A charge of 86 grains of cordite W.016 or W.M.017 has been approved as an alternative to N.C.(Y), to be used only with primary cartridges filled ballistite.

285. PRIMERS, PERCUSSION, Q.F. CARTRIDGE "Q" MARKINGS.

Reference Item 144, Bulletin No.14. A number of primers have been issued on which the "Q", denoting the use of Q.F. cap composition in the primer cap, has been stamped below the number and mark of the primer instead of following the date of filling. The stamping is also small and indistinct.

Arrangements for bolder stamping in the correct position have been made for future supplies.

286. GRENADERS, S.I.P. FIRE RISKS.

Trials have been carried out recently to ascertain the consequences of ignition of these grenades in store and the best methods of dealing with such an occurrence.

These showed that the firing of one grenade in a box or of several grenades in a stack of boxes is not likely to produce a fire which could not be attacked by normal methods.

Burning material will not be projected very far, although adjacent grenades in the stack may be burst. A grenade igniting in an open isolated box will not be likely to project burning material for more than 40 yards.

The most satisfactory method of dealing with a fire of this nature is by water from a hose. The liquid phosphorus will ignite again when it dries so it should be covered with wet sand and removed. Personnel employed on this task must wear protective gauntlets, preferably rubber, eye-shields and rubber boots, as phosphorus causes severe skin burns, requiring special treatment.

The grenades produce dense smoke, which is not dangerous but is corrosive and unpleasant. Consequently, fire fighters should wear smoke helmets or the Service Respirator if dealing with a fire within a building.

The method of treating phosphorus burns is dealt with in Item 118, Bulletin No.12.

287. AMENDMENTS.

Bulletin No.9, Item 86, line 14:- Delete "blue" and substitute "black"

Bulletin No.17, Item 204, page 11, line 7 :- After "packages" insert ", delete "and" and substitute "black on"

Bulletin No.19, Item 250, line 29 :- Delete "positions" and substitute "portions"

Item 255, line 8 :- Delete "Mark I" and substitute "Mark II"

Item 261, line 21 :- After "Fig." insert "83"

Item 263, line 19 :- Delete "explosive" and substitute "explosion".

Fig.87, Section AA:- Delete the dotted lines indicating an inclined flash channel in the lower time ring.

288. FUZES NON-LEAD FREE.

Item No.205 in Bulletin No.17 is hereby cancelled and the following substituted :-

Reference Item 158, Bulletin No.15 When these non-lead free fuzes are inserted, the shell will be tencilled -

LEAD FUZES
Re-examined / /

The date month and year will be 6 months from the date of fuzing.

289. BOMBS, M.L., H E , 3-INCH MORTAR - STENCILLING.

The following batches sub-batches of this ammunition have been issued to the Service stencilled with the incorrect design number of the method of filling i.e., 7407 instead of 9638. To avoid the re-stencilling of this ammunition, which is otherwise correct, this information is published for the guidance of I.O.Os

B.305	B.332A	B.359	B.387B	B.854	B.891
306	332B	360	388	855	892
307	333	361	389	856	893A
308A	334	362A	390	858A	893B
308B	335	362B	391	858B	894
309	336	363	392A	859	895
310	337A	364	392B	860	896
311	337B	365	393	861	897
312	338	366	394	862	898A
313A	339	367A	395	863A	898B
313B	340	367B	396	863B	899
314	342A	368	397A	864	900
315	342B	369	397B	865	
316	343	370	398	866	
317	344	371	399	867	
318A	345	372A	400	868A	
318B	346	372B	837	868B	
319	347A	373	838A	869	
320	347B	374	838B	870	
321	348	375	839	871	
322	349	376	840	872	
323A	350	377A	841	873A	
323B	351	377B	842	873B	
324	352A	378	843	874	
325	352B	379	848A	875	
326	353	380	848B	884	
327	354	381A	849	885	
328A	355	381B	850	886	
328B	356	382	851	887	
329	357A	385	852	888A	
330	357B	386	853A	888B	
331	358	387A	853B	889	
				890	

For details of method of filling designs 7407 and 9636 see Item 281.

290. PYROTECHNICS. ROCKETS, VARIOUS, TRADE PATTERNS.

1. Signal, Light and Sound, 3 star red, Mark I T.P.
2. Signal 5 star Green, Mark I T.P.
3. Rocket, Signal, 3 star Red, Mark I. T.P.
4. Rocket, Signal, 3 Star Green, Mark I. T.P.
5. Rocket, Signal, Golden Rain, Mark I. T.P.
6. Rocket, Flash and Sound, 1 lb. Mark I T.P.

The above stores are trade pattern pyrotechnics and the first issues to the service have been made under trade nomenclature as indicated below:-

- (1) Flare, Modified Board of Trade, Signal Distress Marine (red modified)
- (2) " " " " " " " " (green)
- (3) Rocket, Red, 3 star 1 lb.
- (4) Rocket, Green, 3 star, 1 lb
- (5) Golden Rain Rocket 1 lb.
- (6) Rocket 1 lb. Flash and Sound.

These signals and rockets are a requirement for the three services and their use has been given in the recognised code book.

In order to standardize supply (scales of issues as required by the three services and method of packing) action has been initiated to put these stores and packages on a service basis, and it is anticipated that service designs will eventually be prepared.

Description of stores and packages.

- (1) Signal light and sound 3 Star Red, Mark I.
Fig.95.

The signal consists of two cylindrical paper cases. The long case contains a flash and sound unit, 3 red stars, delay composition and gunpowder expelling charges. On top of the delay composition is a layer of match composition and at the reverse end is fitted a wood plug. The stem of the plug has a coating of friction composition. The short case is filled with white flare composition and closed at one end by a clay plug. On top of the flare composition is a layer of match composition. The filled cases are secured together by two string ties and paper wrapping.

The match composition in each of the two cases is covered by cardboard disc; the two discs are attached to a piece of linen tape. This assembly when positioned forms the tear-off strip.

Over the tear off strip assembly is a paper cap which encloses the functioning end of the completed signal.

Star Flash and Sound.

The flash and sound composition is filled into a rolled paper tube; one end is closed by a wood plug, and the other end by a plug having a circular hole through which a length of Bickford fuze is inserted.

Each end of the Bickford fuze and the exterior of the completed star unit is primed.

Red Star.

The star composition is stemmed into a rolled paper tube; each end of the star is primed, and at one end are two pieces of quickmatch which contact the star composition, the free ends extending beyond the star priming.

On functioning the white flare should burn for approx. 45 secs; the flash and sound unit and 3 red stars are ejected to an approx. height of 50 ft. The sound effect is a loud report and the red stars should burn approx. 3 secs. The delay before the sound effect is ejected is approx. 10 secs., and the subsequent interval between the stars is approx. 5 secs.

(2) Signals, 5 Star Green, Mark I. T.P.
Fig.96.

This signal is similar in construction to the one described at (1) above, the difference being that the short case is filled with green star composition and the long case filled with 5 green stars.

On functioning the green flare should burn for approx. 45 secs. and the 5 green stars are ejected to a height of approx. 50 ft. The stars should burn approx. 3 secs. The time of delay before ejection of stars is similar to that for signal described at (1) above.

Green Star.

Except for the composition used the star is similar to the red star described above.

Labelling.

Each of the above types of signal is labelled with a combined descriptive and instructional label.

NOTE: Some issues have been labelled with firms' instructional label; in order to identify these signals an additional descriptive label has been affixed lengthwise along the star case of each signal.

Details of Labels used.

H.1406.

SIGNAL
LIGHT AND SOUND,
3 STAR RED, MK.I T.P.

DIRECTIONS FOR USE.

TEAR OFF STRIP from top o
of Signal, PULL out
Firing Plug from BASE,
and draw across exposed
top HOLD the Signal to
LEEWARD, and AWAY from
THE BODY.

Made by _____ Lot _____
/

H.1408.

SIGNAL,
5 STAR GREEN MK.I T.P.

DIRECTIONS FOR USE.

TEAR OFF STRIP from top of
Signal, PULL out Firing
Plug from BASE, and draw
across exposed top. HOLD
the Signal to LEEWARD, and
AWAY FROM THE BODY.

Made by _____ Lot _____
/

Additional descriptive labels
supplementing firm's instructional labels.

H.1405.

SIGNAL, LIGHT AND SOUND, 3 STAR RED, MK.I T.P.

H.1407.

SIGNAL, 5 STAR GREEN, MK.I T.P.

The signals are packed 12 per carton and 12 cartons are packed into a trade pattern wood case (144 signals per case).

The sizes of carton and case are as follows

Cartons $17\frac{1}{4}"$ x $5\frac{1}{4}"$ x $4"$
Case 22" x $17\frac{1}{2}"$ x $12\frac{3}{8}"$.

The approximate weight of complete package is 100 lb.

The case is unpainted and the exterior is stencilled with details of contents, manufacturer's initials, lot number and date.

(3)	Rocket, Signal, 3 star Red, Mark I. T.P.	Fig. 97.
(4)	" " " " Green " " "	Fig. 98.
(5)	" " " Golden Rain, Mark I.T.P.	Fig. 99.

The above types of rockets are similar in construction; the differences are mainly the type, colour and number of stars used.

The components consist principally of two cylindrical paper cases, stick socket, ignition system and cover. The rocket case is choked at one end by means of twine and the reverse end is stepped and forms a seating for the star case. The rocket case is filled with rocket composition, two cavities are formed in the composition and each end of the composition is covered by a topping of clay. A piece of quickmatch, for take over of ignition from the rocket composition to the star units, is positioned in a cavity formed in the rocket composition and hole in clay plug. The internal wall of case and rear end of cavity formed in the rocket composition are primed. On one side of the rocket case the stick socket tube is secured by a paper patch and on the opposite side is the ignition system.

The ignition system consists of a length of Bickford fuze secured to the case by a paper band. An oblong patch of friction composition is secured to the case by adhesive, its rear end being in contact with the end of the Bickford fuze. The fuze and patch are enclosed by a strip of linen tape and a paper cover; one end of the linen tape is left exposed, thus forming a tear-off strip.

The bottom of the case is closed by a paper cap.

The star case containing the stars and the cover are secured by paper bands. The shape of the cover is conical for red star and golden rain rockets, and dome shaped for green star rockets. A striker is fitted in the front end of the stick socket tube.

STAR FOR ROCKETS SIGNAL, 3 STAR RED AND 3 STAR GREEN.

The star composition is pressed in a rolled paper case, and each end of the composition is primed. Two pieces of quickmatch adjacent to each other down the sides of the case are bent round the star unit in opposite directions. The quickmatch is retained in position by two paper bands, one securing the quickmatch to the face of the priming at each end of the star and the other to the wall of the star case.

STAR FOR ROCKET SIGNAL, GOLDEN RAIN (28 per Set).

Each star is formed by pressing the requisite amount of composition into cylindrical pellets.

(6) Rocket Flash and Sound 1-lb. Mark I. T.P.
Fig.100;

This rocket is designed to give a flash and sound effect and is slightly different in construction from the types described above. The case containing the flash and sound composition has a thicker wall than the cases used for rockets containing stars. Embedded in the flash and sound composition are strands of quickmatch, one of which passes through hole in wood plug closing rocket case. This strand of quickmatch is covered by meal-powder in the cavity of the rocket composition and hole in clay plug, and forms the take-over from the rocket composition to the flash composition. The dome-shaped nose plug is secured to the paper case by wire nails and a paper band. Assembly of other details is similar to the rockets described above.

LABELLING.

Each of the above types of rockets is labelled with a descriptive and instructional label. These labels have been prepared and printed by the pyrotechnic firm, therefore issues do not bear the service nomenclature now allocated.

The instructional text is similar for the four types of rockets, which reads as follows .-

Insert stick in socket. To Fire. - Expose the friction composition in front of Rocket by tearing away the tape, withdraw the PLUG from the socket, and draw it smartly across the top of the exposed composition.

The nomenclatures which precede the above instructional text are as follows :-

Item (3) and (4)	SIGNAL ROCKET
" (5)	SIGNAL ROCKET Golden Rain.
" (6)	SIGNAL ROCKET Flash & Sound

Service labels have now been prepared; these labels give the service nomenclature for the store.

The instructional text, is similar to the details given above.

Label H. 1427	Rocket, Signal 3 star Red, Mark I T.P.
" H. 1428	" " " Green " " "
" H. 1429	" " Golden Rain " " "
" H. 1409	" Flash & Sound, 1 lb. Mark I.T.P.

TYPICAL LABEL.

H.1427.
<u>ROCKET, SIGNAL, 3 STAR RED.</u>
<u>MARK I T.P.</u>
<u>DIRECTIONS FOR USE.</u>
Insert stick in socket.
TO FIRE:- Expose the friction composition in front of rocket by tearing away the tape, withdrawn the PLUG from the socket, and draw it smartly across the top of the exposed composition.
Made by _____ Lot _____
/

FUNCTIONING.

On functioning the rockets should rise to an approximate height of 1,000 ft. and burst at the top of their trajectory.

For Rockets, Signal, 3 Star Red and 3 Star Green the approximate time to burst is 6 secs. and time of burning of stars should be approximately 11 secs.

For Rocket, Signal, Golden Rain, the approx. time to burst is 5.5 secs.

The Rocket Flash and Sound on bursting should give a flash and sound effect.

PACKING.

The rockets are packed into a trade pattern wood case, 100 rockets per case.

The rockets are suitably protected from damage by use of suitable packing material.

The approximate weight of complete package is 115 lb.

The case is unpainted and the exterior is stencilled with details of contents, manufacturer's initial, lot number and date.

291. GENERATOR, SMOKE, NO.18 MARK I.
Fig.101.

The empty generator is made of tinned-plate throughout, and consists of a cylindrical body, baffle, igniter cup support, igniter cup, lid and bottom.

The baffle is secured to one end of the body by cannelluring and soldering of the joint made by the turnover of the baffle on to body. The remaining components except lid and bottom are secured by soldering.

An igniter pellet is housed in the igniter cup and is retained by the top which is pressed on to the igniter body. On top of the igniter pellet is a blob of match composition. Secured to the baffle is a hardwood striker. The body contains smoke composition on which is a layer of igniter composition retained by a millboard serrated washer. The body is closed by seaming on the bottom and soldering the joint.

The lid is secured to the generator by adhesive tape, a tag on the tape being formed to facilitate easy removal of lid. A felt washer secured to underside of lid protects match composition blob.

The exterior of the completed generator is lacquered or painted light green.

Generators made from lacquered plate have a descriptive and instructional legend printed on the lid and on the bottom is printed GEN. SMOKE No.18 I, empty manufacturers' initials or recognised trade mark and month and year of manufacture.

Generators painted green have a descriptive and instructional label affixed to lid, the details being similar to the tin printed legend. On the painted bodies the marking on bottom is stamped on.

After ignition the generator should be placed on the ground.

On functioning the period of effective smoke emission should be not less than 4 minutes and no more than 6 minutes.

The time from striking to effective emission varies between 20 to 40 seconds according to the composition used (alternative compositions).

Present deliveries are packed into cases wood packing, a case packs 8 generators.

The approximate stowage dimensions of case are:

18.56" x 8.75" x 9"

Weight of case empty approx. 7 lb.
" " " packed " 60 lb.

The case is painted light green and details indicating content, contractors initials, lot number and date of manufacture are stencilled on the case.

Box M 116, Mk.I has now been approved and will be introduced for future packing requirements. The box packs 8 generators.

Stowage size of box M 116

18.75 x 0.75 x 10.2

292 GRENAD, No.67, LACHRYMATORY, MARK I.

This grenade contains a liquid which when scattered by break up of the grenade produced a gas cloud. The gas mainly affects the eyes of personnel and causes profuse flow of tears.

The grenade consists of a 100 watt bulb with filament removed, and is charged with approx 250 ccs. of K.S.K. or S.K., sealing being effected with plaster Paris. A descriptive and instructional label is affixed to the finished grenade.

Details of label --

H.1381.

GRENAD, HAND, NO.67, LACHRYMATORY MARK I.
Instructions for Use.

Throw the bulb about 20 feet into the air so as to fall and break upwind of the objective

50 grenades are packed into a fibre board case reinforced by battens.

The case is provided with "egg-box" type compartments each compartment housing one grenade enclosed in a corrugated paper sleeve. When packed the grenades are in two tiers of 25, the tiers being separated by a corrugated pad; similar pads are positioned on bottom of case and on top of 2nd tier.

The approx. stowage dimensions of case are 21 5" x 21.5" x 15 25".

Weight of empty case and internal packing components -- approx. 27 lb.

" " filled case approx. 74 lb.

The case is painted gray, and in addition to the stencilling indicating contents, a black band $1\frac{1}{2}$ inches wide is painted centrally around the case. The code letter and numeral indicating the nature of charging is stencilled on in white on the black band. First supplies of grenades were packed 50 in a cardboard box, each grenade in a corrugated paper cylinder, in two layers of 25.

The two layers are separated by a cardboard sheet, the space between the corrugated cylinders being filled with sawdust.

Weight of cardboard box filled approx. 55 lb.

PROPELLANTS. BATCHED AMMUNITION, Q.F. 40 M.M., CONTAINING CORDITE BOFORS.

Reference Item 203, Bulletin No.17, the following additional Batch numbers of 40 m.m. ammunition contain Cordite, Bofors:-

B.101C, 102C, 105U, 107N and 108Y.

TUBES, PERCUSSION, S.A. CARTRIDGE, MARKS III AND IV.

Fig. 102.

The magazines of these tubes are divided into two parts by a perforated pellet of gunpowder. The pellet is paper wrapped and secured in position with shellac adhesive. The pellet in this position serves as a separator between the priming of gunpowder G.20 and the main filling which consists of gunpowder pellets and G.20.

The body gas seal in the Mark IV tube differs from that in the Mark III in the angle and length of the conical hole which, in conjunction with the ball, provides a means of internal sealing.

FUZE, TIME AND PERCUSSION NO.222 MARK I. (Fig.103.)

This is a detonating fuze and is designed to give the same ballistic performance as the fuzes No.117, 119 and 231 and resembles these fuzes in shape.

The time mechanism consists of an inertia pellet carrying a detonator held off a fixed needle by a spring. The flash channel leading to the upper time ring is of the baffle type.

The percussion mechanism is similar to that in the fuze No.220 and consists of an inertia pellet carrying a needle held off a fixed detonator by a creep spring. The inertia pellet is also held by a centrifugal bolt which is kept in position by means of a detent. Grooves are formed down the sides and across the base of the pellet to provide flash channels for the percussion detonator.

The means of converting the igniferous effect of the percussion detonator to detonation consists of an enclosed perforated pellet of gunpowder positioned above a 5 grain A.S.A. detonator. This assembly is also used for the same purpose in connection with the time action when the flash passes from the platform to the assembly by means of a channel containing perforated pellets of gunpowder.

The shutter is similar to that in the fuze No.231 and consists of a flat piece of metal positioned in a groove about the stemmed channel leading to the C.E. filled magazine of the fuze. The shutter is provided with a hole which is stemmed with C.E. The shutter in the safe position is held by its spring and the two positioning pieces which enter slots at the other end.

296. PROPELLANTS, FLASHLESS. NOMENCLATURE.

A system of nomenclature by letters which will indicate the composition, type of nitrocellulose used and the shape of the propellants has been approved. The letters adopted to indicate each of these particulars are grouped by means of oblique strokes and their significance is as follows :-

Composition.

- N Signifies flashless propellant generally and when not followed immediately by another letter signifies flashless propellants of the R.D.N. type.
- NQ Signifies flashless propellants of the R.D.Q. type.

Type of Nitrocellulose Used.

- A Signifies soluble nitrocellulose (12.2 per cent nitrogen content) made from cotton.

The absence of this letter signifies insoluble nitrocellulose i.e. guncotton (13.1 per cent. nitrogen content).

Shape.

- T Signifies tubular.
- S Signifies slotted tubular.
- M Signifies multi-tubular.

The absence of all of these letters signifies cord.

The following examples show the arrangement of the letters under this system :-

Present Nomenclature.

New Nomenclature.

Cordite R D.N./A 042	Cordite N 042.
Cordite R.D.Q.045.	Cordite N.Q.045.
Cordite R.D.N./A.Q.M.T.7 web 048.	Cordite N/A/M 048.
Cordite R.D.N./A.Q.(Guncotton) S.T.164-048.	Cordite N/S 164-048.
Cordite R.D.Q.T.111-037.	Cordite NQ/T 111-037.

297. WEIGHT MARKING. B.L. 4.5-INCH GUN, 5.5-INCH GUN, 7.2-INCH AND 9.2-INCH HOWITZERS.

- Shell B.L. H.E. S/L 4.5-inch gun.
- Shell B.L. H.E. S/L 5.5-inch gun.
- Shell B.L. Chemical B.E. S/L 5.5-inch gun.
- Shell B.L. H.E. S/L 7.2-inch howitzer.
- Shell B.L. H.E. S/L 9.2-inch howitzer, 315-lb.

The standard weight and weight-marking units used in the Range Tables for the abovementioned shell are given in the following table :-

Calibre	4.5-inch Gun	5.5-inch Gun.		7.2-inch How	9.2-inch How
Standard Shell	H.E.	H.E.	Chem.B.E.	H.E.	H.E.
Standard Fuze	117 or 119	117 or 119	221	117 or 119	117 or 119
Standard Weight	55-lb.	109-lb.	90-lb.	200-lb.	315-lb.
Unit of Weight	$\frac{1}{2}$ -lb.	1-lb.	1-lb.	2-lb.	2-lb.
Markings.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
+ 3	56 12	103 8	93 8	207 0	322 0
above	56 4	102 8	92 8	205 0	320 0
+ 2	56 4	102 8	92 8	205 0	320 0
above	55 12	101 8	91 8	203 0	318 0
+ 1	55 12	101 8	91 8	203 0	318 0
above	55 4	100 8	90 8	201 0	316 0
0	55 4	100 8	90 8	201 0	316 0
	54 12	99 8	89 8	199 0	314 0
- 1	54 12	99 8	89 8	199 0	314 0
below	54 4	98 8	88 8	197 0	312 0
- 2	54 4	98 8	88 8	197 0	312 0
below	53 12	97 8	87 8	195 0	310 0
- 3	53 12	97 8	87 8	195 0	310 0
below	53 4	96 8	86 8	193 0	308 0

28. BATCHED AMMUNITION. EXCHANGE OF COMPONENTS.

In order to maintain the records of batched ammunition, it is essential that exchanges in components should be notified to C.I.A., on A.F.G.837, in accordance with R.A.O.S., Part II, Pamphlet No.2, Para.102 (as amended by Amendment No.33). The discontinuance of the issue of A.F.G.836 for batched ammunition does not cancel the instructions given in this para., regarding the notifying of C.I.A., on A.F.G.837.

ENEMY AMMUNITION.

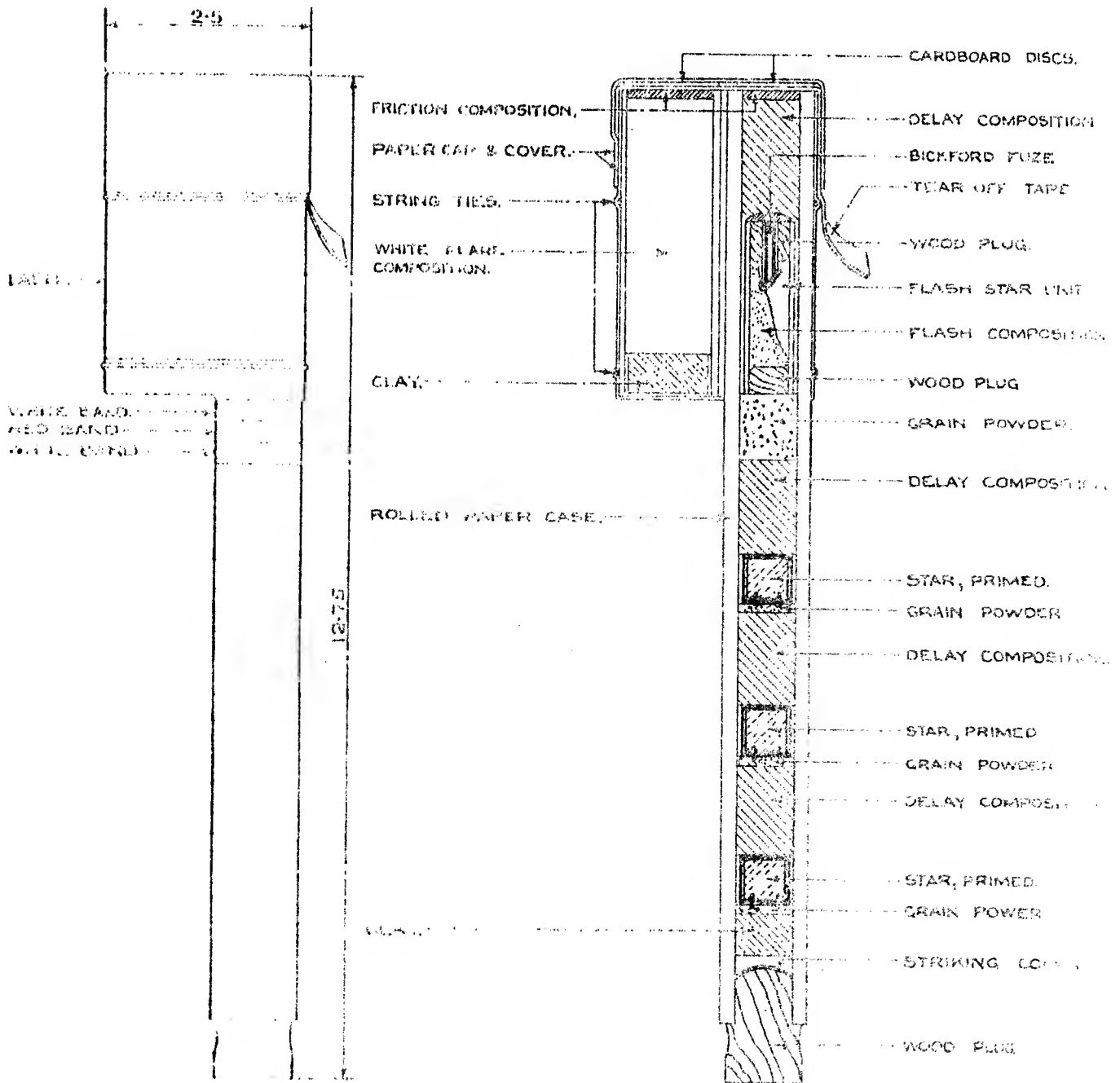
299. GERMAN 1 KG. INCENDIARY BOMB WITH H.E. BURSTING CHARGE.

Fig.104

Reference Item 169, Bulletin No.15. The explosive charge referred to in this item is shown in Fig.

FIG. 95.

ROCKET, SIGNAL, LIGHT & SOUND 3 STAR, RED, MARK I. T.P. AND
3 STAR GREEN MARK I. T.P.



SECTIONAL VIEW OF THE PAPER CASE

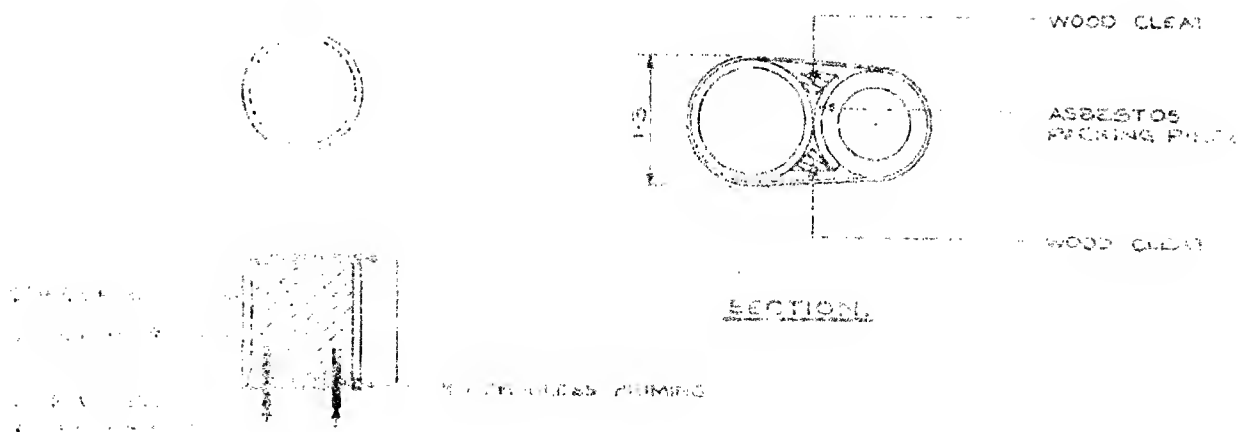
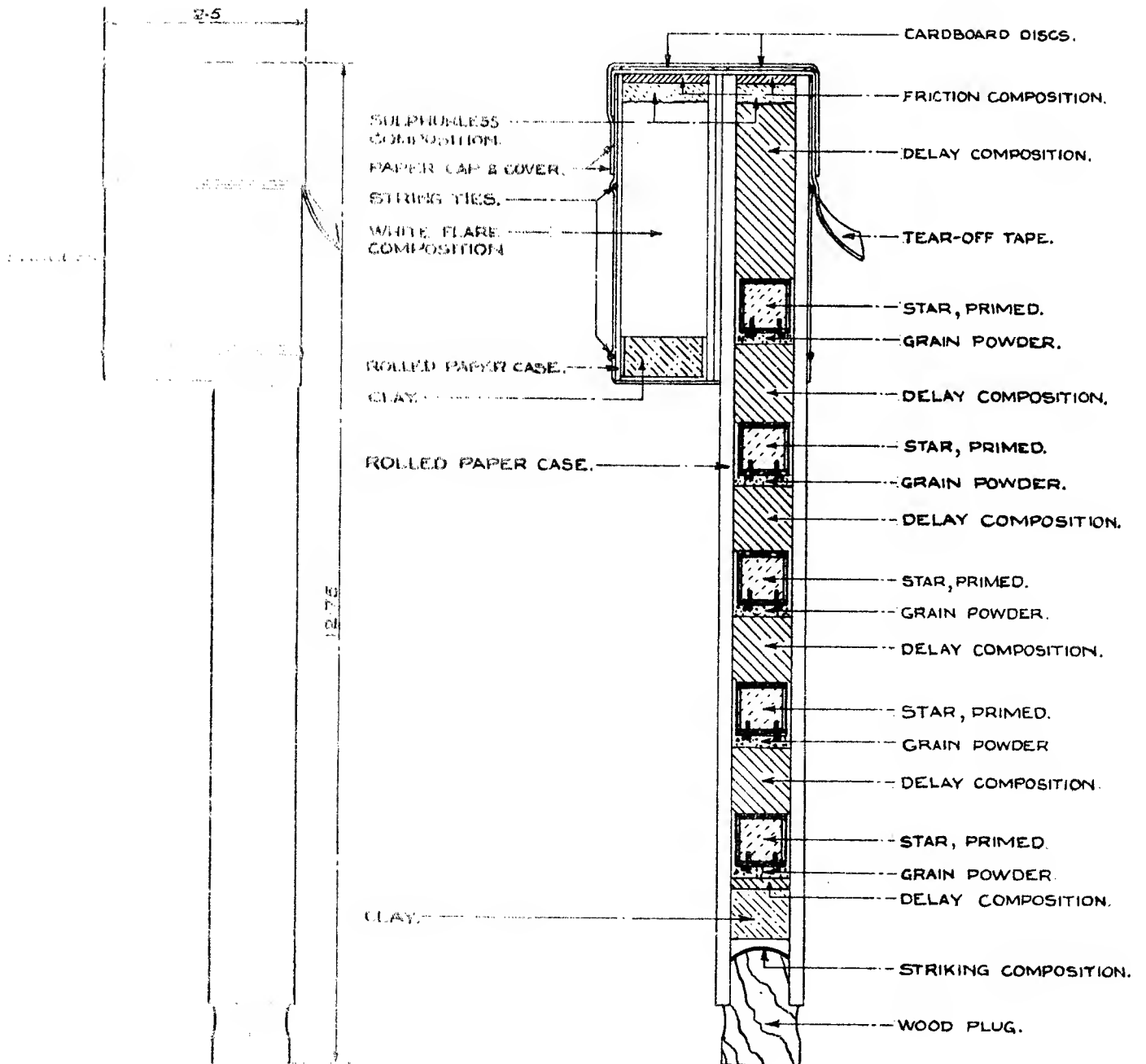
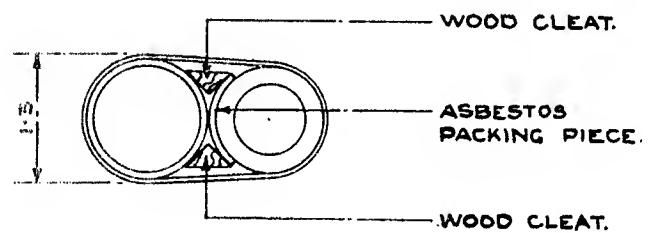


FIG. 96.

ROCKET, SIGNAL, 5 STAR, GREEN, MARK I. T.P.



ENTIRE SURFACE OF SIGNAL TO BE PAINTED GREEN.



SECTION.

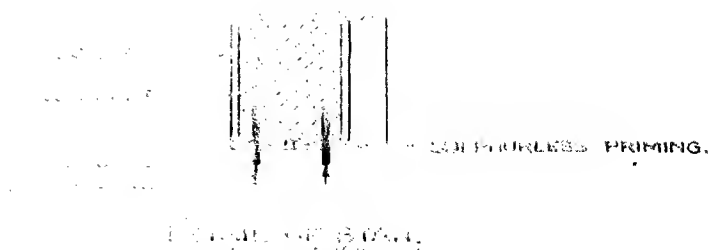
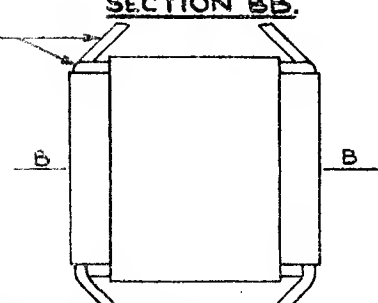
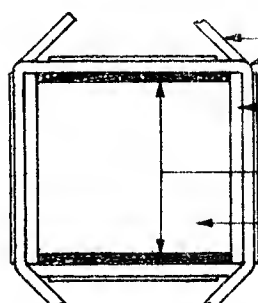
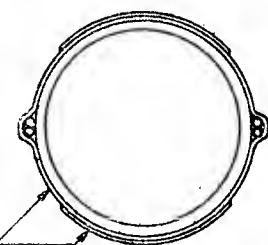
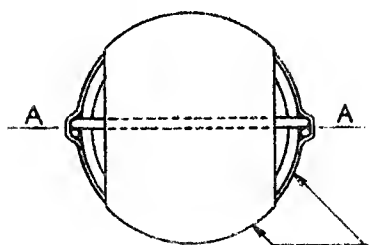
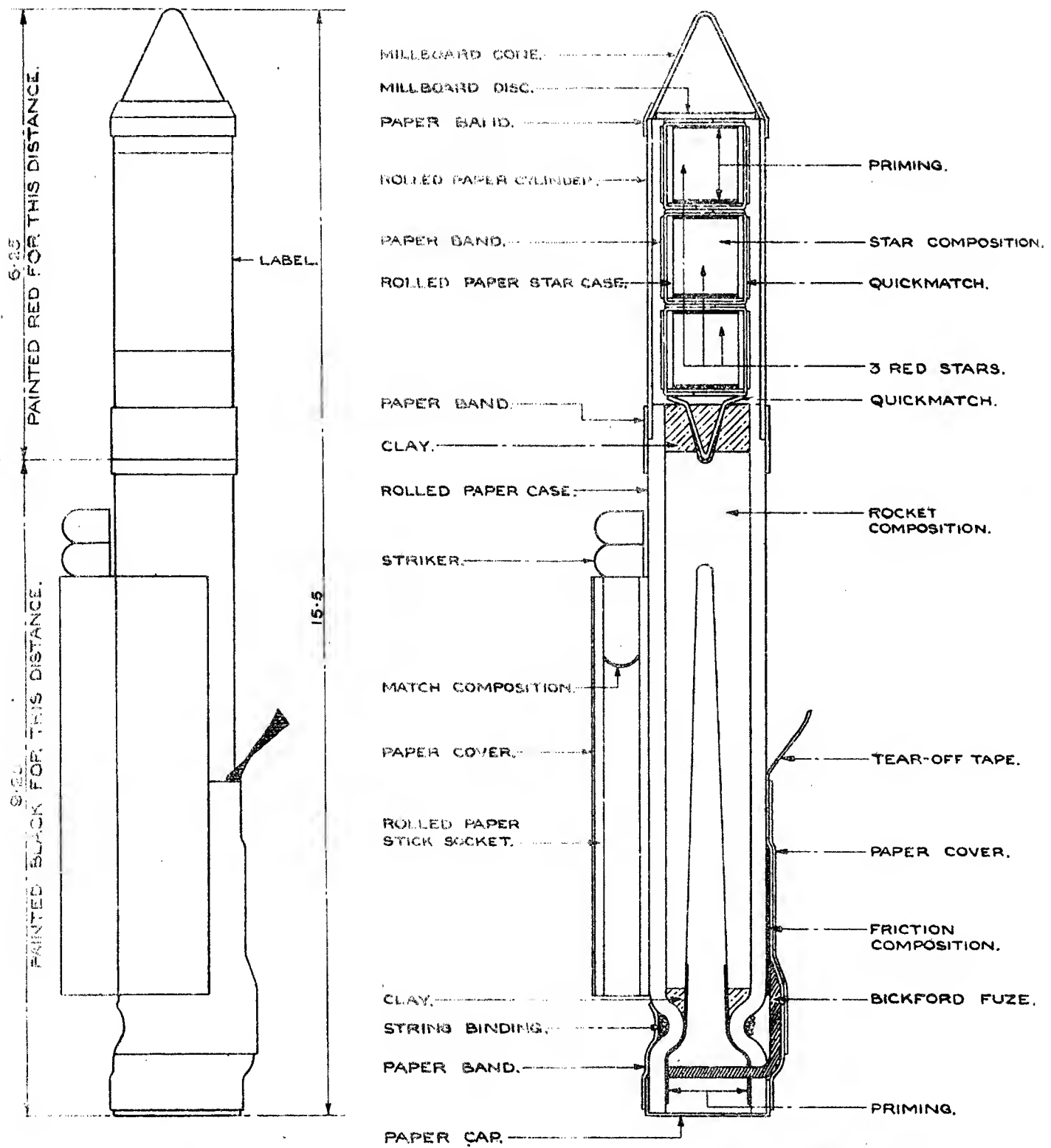


FIG. 97.

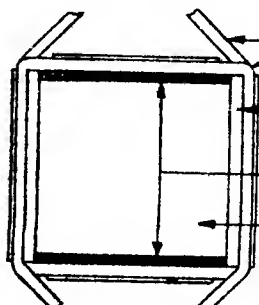
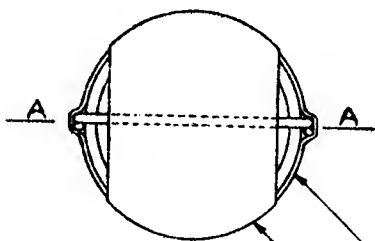
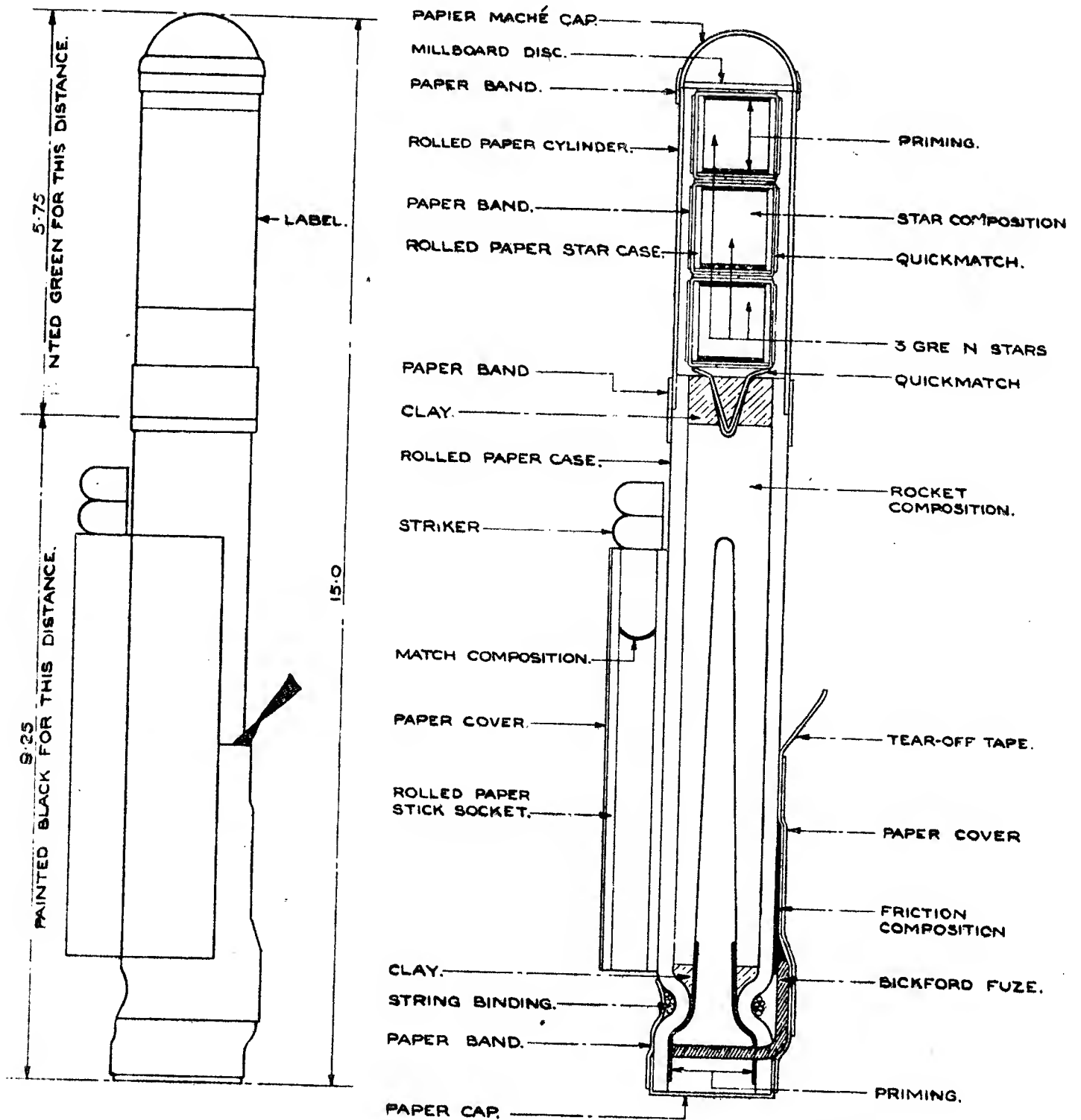
ROCKET, SIGNAL, 3 STAR RED MARK I.T.P.



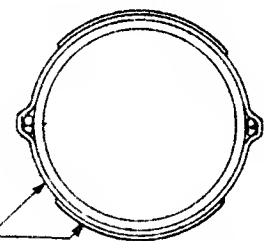
DETAILS OF STAR BEFORE ASSEMBLY.

FIG. 98.

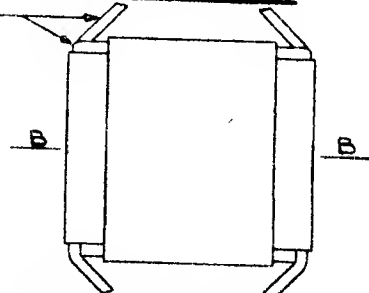
ROCKET, SIGNAL, 3 STAR, GREEN MARK I.T.P.



SECTION AA.



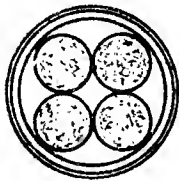
SECTION BB.



DETAILS OF STAR BEFORE ASSEMBLY.

FIG. 99

ROCKET SIGNAL, GOLDEN RAIN, MK. I.T.P.



SECTION AA.

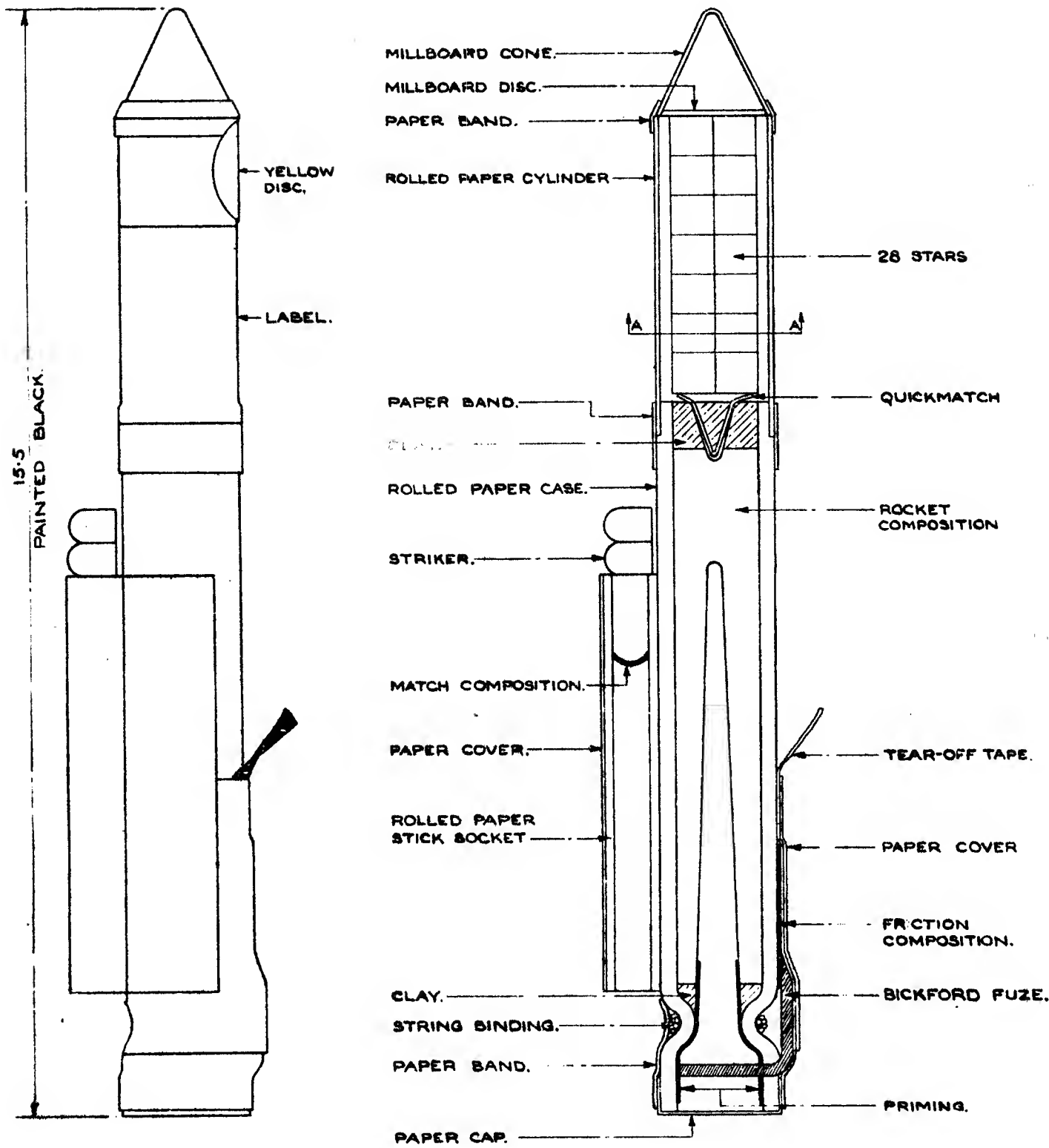
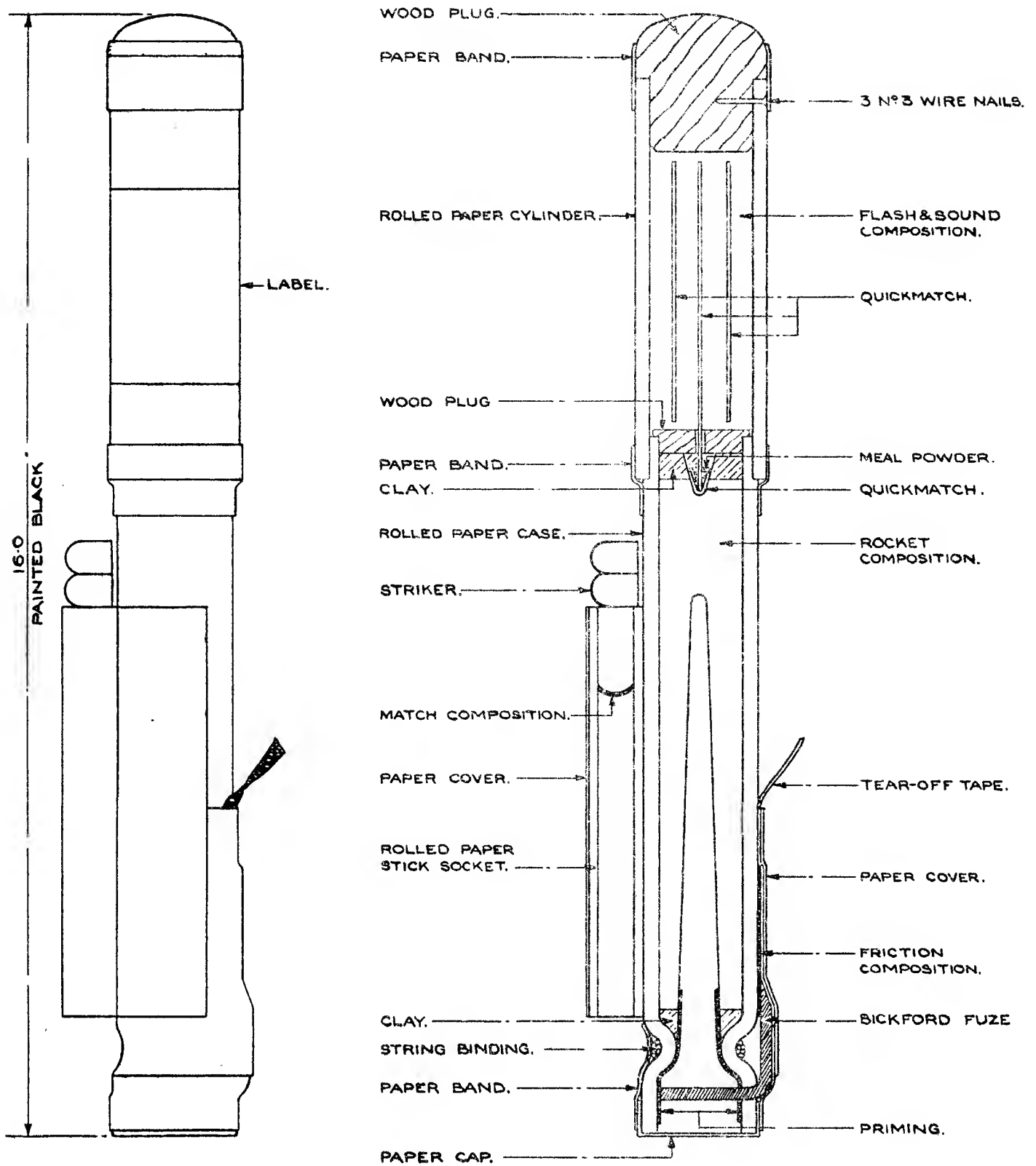


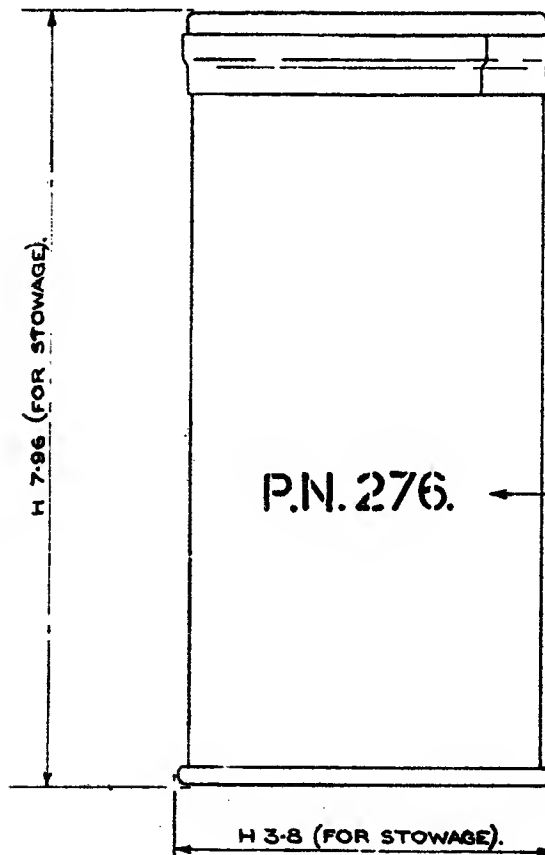
FIG. 100.

ROCKET, FLASH AND SOUND MARK I. T. P.



GENERATOR, SMOKE №18. MARK I.

FIG. 101.



THE WHOLE EXTERIOR
OF GENERATOR
FINISHED LIGHT GREEN.

LEGEND IS TIN-PRINTED ON,
OR ALTERNATIVELY, LABELLED.

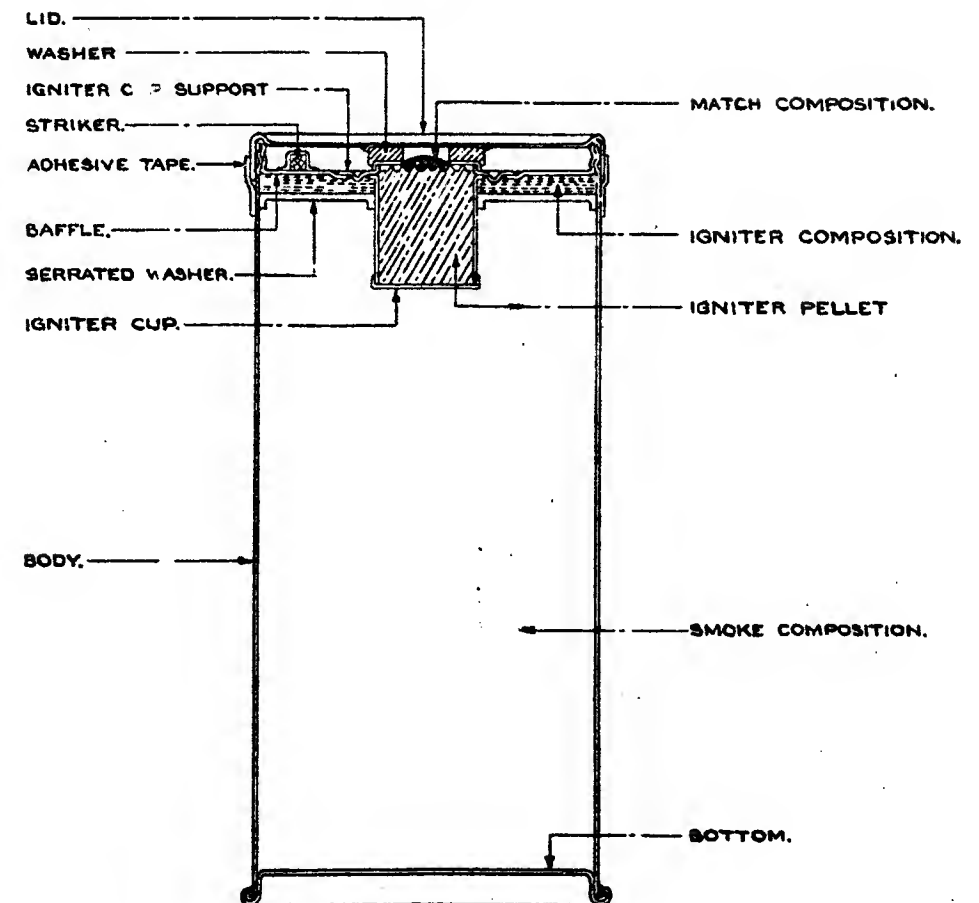
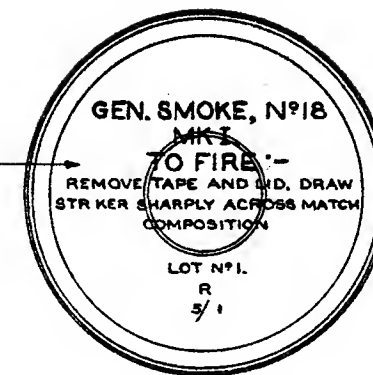
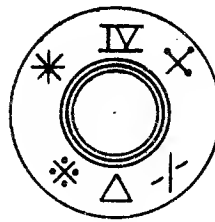
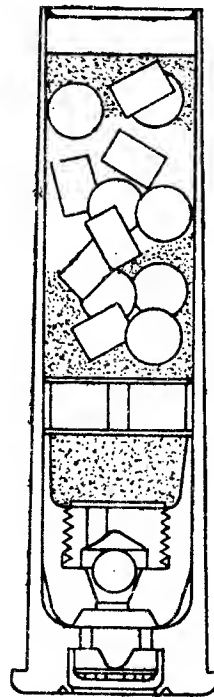
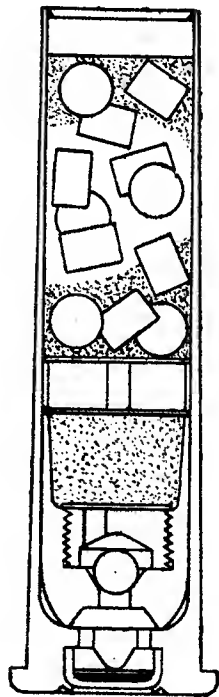


FIG. 102.
TUBES PERCUSSION, S.A. MARK III & IV.



FUZE, TIME & PERCUSSION N° 222. MARK I.

FIG. 103.

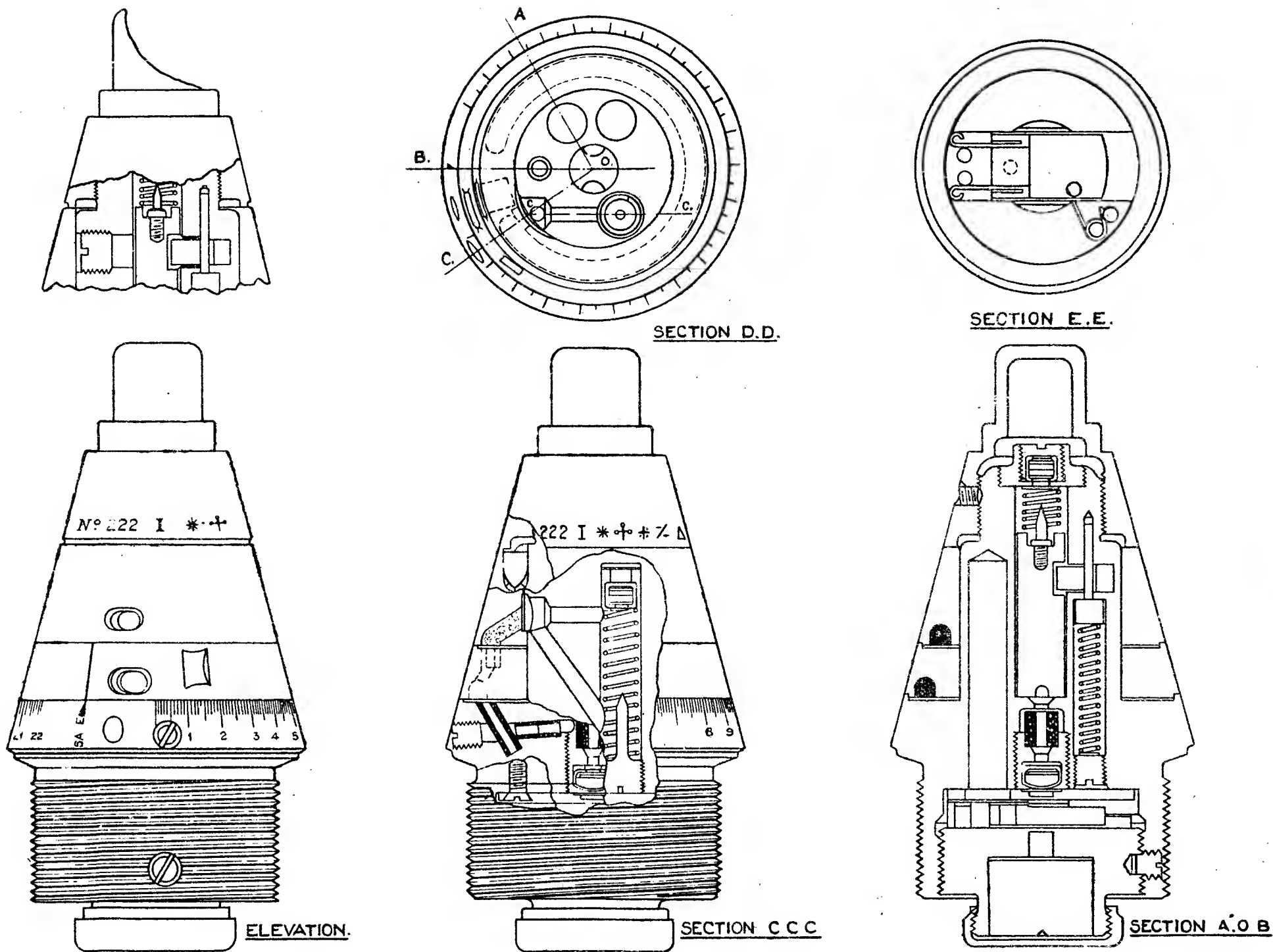


FIG. 104.

GERMAN INCENDIARY BOMB 1.K.G.
WITH H.E. BURSTING CHARGE.

